DOCUMENT RESUME

ED 313 449 TM 014 305

AUTHOR Bobbett, Gordon C.
TITLE Post-Secondary Programs Musical Independence and Related Academic/Musical Experiences.
PUB DATE Nov 89
NOTE 20p.; Paper presented at the Annual Meeting of the Mid-South Educational Research Association (Little Rock, AR, November 8-10, 1989).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Achievement Tests; *Bands (Music); *College Students; *Curriculum Evaluation; Educational Experience; Higher Education; Music Activities; *Music Education; *Program Evaluation; Standards
IDENTIFIERS Music Achievement Test 3 (Colwell); *Musical Independence

ABSTRACT

This paper discusses the need for standards for instrumental music students and programs. Standards should be developed within a sound theoretical framework. Bobbett's theoretical framework for college musical students, as illustrated by the hierarchy of musical independence, is discussed; and musical independence is distinguished from musical achievement. Musical independence, composed of a broad variety of skills, is directly related to the amount of assistance needed by the individual or group--the less assistance needed, the higher the musical independence. The musical independence of instrumental band students at a large, postsecondary institution--the University of Tennessee at Knoxville--was evaluated using Colwell's Music Achievement Test 3 (MAT3). Students participating in the wind ensemble (n=51) and campus band (n=73) were evaluated. In addition to the MAT3, demographic questions covering general, high school, and college activity areas were included. Test results indicate that: (1) the MAT3 distinguished between students in the top performing band (wind ensemble) and those in the training band (campus band); (2) all musical skills tested fit logically into the musical independence hierarchy; and (3) musical independence requires many types of musical training and experience, not just cognitive and sensing skills. It appears that the MAT3 can be used not only to measure growth in a secondary program, but to "red flag" programs that are not growing. (TJH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED313449

POST-SECONDARY PROGRAMS MUSICAL INDEPENDENCE AND RELATED ACADEMIC / MUSICAL EXPERIENCES

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

GORDON C. BOBBETT

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Dr. Gordon C. Bobbett
Union College, Barbourville, KY

Descriptors
Evaluation
Tests
Arts

1989 Mid-South Educational Research Association
Little Rock, Arkansas

Discussion Session
November 9, 1989
2:00 - 2:50 p.m.

TM014305

BEST COPY AVAILABLE

Post-Secondary Programs Musical Independence and Related Academic/Musical Experiences

I. Introduction

This paper discusses the need for standards for instrumental music students and programs. However, standards should be developed within a sound theoretical framework. Bobbett's theoretical framework, as illustrated by the hierarchy of music independence, is discussed. The author evaluates the musical independence of instrumental band students at a large, post-secondary institution using Colwell's Music Achievement Test 3. Test results showed that: (1) the MAT3 distinguished between students in the top performing band and those in the training band, (2) all musical skills tested fit logically into the musical independence hierarchy, and (3) musical independence requires many types of musical training and experience, not just cognitive and sencing skills.

A. Practical Applications for Musical Assessment

Program evaluation, recruitment, and scholarships are three of many reasons to develop post-secondary instrumental music standards. Also, a national reform movement is underway in public education for developing standards in all academic areas based on student achievement (24 states currently mandate the application of such standards at the public school level). It is only a matter of time until such standards will be applied at the post-secondary level.

Instrumental music program evaluation is challenging because many variables influence the student's and program's growth. A typical post-secondary program such as history or math is difficult to evaluate. Music programs are more formidable to assess because of the additional skills involved, including listening, psycho-motor, and aesthetic skills.

From Bach to Beethoven to Barber, musical excellence has remained constant. Unfortunately, music educators have floundered in their attempt to identify specific skills associated with such excellence. For example, approximately every decade in the 20th century, music educators identified a new set of specific music skills which they considered the fundamentals of musical achievement. Whenever there is a consensus in identified important music skills, it occurs more by coincidence than by sound, rational decision-making. ***Why?***

Music educators realize that right answers in skill identification do not necessarily equate to comparable methodology or similar philosophical positions. Consequently, music achievement tests have faded in and out of use because they lacked a theoretical foundation. As a result, music educators have been slow to recognize the interrelationship among the musical skills associated with musicianship. A professional performer would not be a professional without a thorough understanding of the greater dynamics of musicianship. The aspiring professional musician realizes that certain musical skills have little bearing on being musically excellent, whereas other skills are essential. In the current academic setting, where there is no distinction between one musical curriculum skill and another, each skill is treated equally.

Another inhibiting factor in developing musical standards is institution or region bias. There are professional standards of musical excellence, but in music education, since skills have been neither identified nor measured on a regional, national, or international basis, there are no universal standards of musical excellence. Hence, no

true musical standards have been developed by music educators on which to evaluate instrumental music achievement.

College **recruitment** deals with an institution's human resources, and is therefore another important reason to develop musical standards. Ideally, standards can be applied as a preliminary assessment of the student's musicianship and ultimately, the student's potential participation in a performing organization. Admittedly, the strength of an educational institution is directly related to the caliber of its students. Ill-equipped students hinder an institution's effectiveness or mission, whereas outstanding students bring pride to and foster growth within an institution.

Lastly, **Money** is a practical concern for both post-secondary students and institutions. Funds used for scholarships are an interrelated and essential part of the student's and institution's total financial picture. Prudence should influence the scholarship allocations. Everyone concerned suffers when a student is awarded a scholarship, but lacks the necessary musical or academic skills to contribute to the performing organization.

II. Musical Independence (MI)

A. Philosophical Background

Historically, musical achievement tests have been designed and written by music educators. The authors, using their judgements, opinions, and observations, identify the skills associated with musical achievement and then develop an instrument to measure these skills. Utilizing proper testing techniques (from content validity to item analysis), they refine both general areas and corresponding test items. Eventually, a new music achievement test is created.

Why do most music educators rarely use available musical achievement tests? One reason is because these music achievement tests are not directly connected to the real world of musicianship. Examples from every day life can illustrate a weakness inherent in musical achievement tests. In engineering, if a bridge lasts and never falls down, then it is assumed that the bridge had a competent designer. Also, if a doctor's patients fully recover, then the doctor, too, is characterized as being good. Both the engineer's and doctor's level of excellence was measured by their **product**, and not some abstract measure of achievement.

Is it unreasonable to evaluate students' musical skills from a practical perspective of productivity? "Achievement" identifies and measures some of the items synonymous with excellence, but these items are not prioritized or organized from a practical perspective. Alternatively,"Independence", reflects productivity, or what the musician can actually produce. Presently, productive measures of musical maturity do not exist. Instrumental performing organizations, therefore, should be evaluated on the students' and programs' "musical independence". MI relates to the instrumental musician's productive qualities. Today, instrumental music educaors have neither identified music skills associated with MI nor developed standards that reflect the student's or program's maturity. However, it is difficult to evaluate students' musical maturity from a "productive" perspective with most of the available music achievement tests.

Most music educators resist the practice of measuring a student's skills in such a practical manner, for they intuitively understand the testing limitations. Another possible explanation for their reluctance to use these tests is their fear of the information gleaned from the test results. For instance, if specific skills were identified and musical priorities were developed, certain courses might be eliminated from the curriculum (because they do not contribute significantly to musical

excellence), while other curriculum courses would be expanded and intensified. The reality is that contemporary musical achievement tests are not widely used, the results are usually discredited by fellow music edeucators and administrators.

Music educators can learn from other disciplines and research. Maslow's hierarchy of "human needs"[1] and Bloom's taxonomy of "thinking skills"[2] represent two systems of organized learning. Bloom's Taxonomy describes thinking skills that range from rote memorization of simple facts to complex evaluations and syntheses. Maslow's hierarchy arranges human needs from the fundamental to the most advanced. Both examples show that to investigate and observe a specific discipline, the researchers must develop, examine, organize, and prioritize the structure's "growth" or "movement". These systems utilize descriptors that articulate movement and growth. Terms such as "*low* to *high*","*beginner* to *advanced*", or "*first* to *last*" describe the breadth of the organizational system. The movement from one level to another describes and qualifies the system's priorities and prerequisites. Likewise, is it possible that music has a natural organization of musical skills?

Bobbett[3], realizing the need to organize and arrange musical skills systematically, developed and constructed a hierarchy of "Musical Independence" (MI), and expanded the simple hierarchy into a comprehensive system[4]. The broad categories or levels of musical skills represent specific levels of musical growth and maturity.

B. "Musical Independence" versus "Musical Achievement"

There is a subtle distinction between musical achievement and musical independence. Musical independence, although tacitly recognized by music educators and professional musicians, is the primary measure of musical excellence. Achievement skills, comparatively, lack a strong, direct linkage to musical excellence. Identifying and organizing skills associated with musical excellence is in many ways reminiscent of the old Hindu proverb of the five blind men and the elephant.

Now, which blind Hindu was correct? Needless to say, all were correct in perceiving parts of the elephant's true shape, but, each was correct within the limits of his individual blindness. Unfortunately, musical achievement tests and the blind Hindus have one similar characteristic--neither perceives the total picture. Whereas the Hindus identified the elephant in terms of a tail and a tusk, music educators identify musical skills in terms of cognitive skills (e.g., key signature, melody recognition, time signature), auditory perception skills, or performance skills. These are the only major areas included in most American musical achievement tests. Unfortunately, a few skills do not represent the complete picture.

The items or categories currently used in evaluating musical achievement are only weakly linked to the world of musical excellence. Although some skills can be identified and measured, the majority may or may not be essential to a musician's independence. Therefore, most music achievement tests have two obvious flaws. First, they identify only a few of the many musical skills associated with musicianship,

---

1 Maslow, Abraham H., Motivation and Personality, 2nd ed., New York: Harper & Row, 1970.

2 Bloom, Benjamin S., Taxomony of Educational Objectives, Longman Inc., New York, 1956.

3 Bobbett, G.C., *Identifying Music Achievement for Students Participating in Outstanding Instrumental Programs*, Dissertation, University of Tennessee-Knoxville, 1987.

4 Bobbett, G.C., *Evaluating Student Achievement in Secondary Instrumental Music Programs*, paper, Mid-South Educational Research Assocation, 1987.

and second, the identified skills are not linked to what is commonly recognized as excellent musicianship.

C. Musical Independence Defined

Musical independence is comprised of a broad variety of musical skills. In a performing organization, the conductor and other musicians want to be assured that each participant has the necessary musical skills to function at the highest possible level of musical excellence. Musical independence, therefore, is directly related to the absence of assistance needed by the individual or group. Thus, the more directions given to the musician, the less independent the individual is; conversely, the fewer directions needed, the higher level of musical independence.

D. Model of Musical Independence

Historically, many general music items/categories have been identified and are represented in past music achievement tests. However, as stated earlier, most music achievement tests are flawed. because the authors lacked a theoretical basis. Hence, the test items/categories are not related to the individual's or group's level of musical independence.

Musical independence requires the mastery of specific musical skills; but what are these specific skills? After reviewing many of the music symposia, conferences, publications, instrumental method books, and American music achievement tests, the author noted that there appear to be common skills associated with musical independence. When viewed collectively, these skills can be grouped and organized into five broad categories: (1) Think, (2) Listen, (3) Perform, (4) Conduct, and (5) Compose. These skills can then be prioritized or incorporated into a musical hierarchy. Naturally, a hierarchy implies that these skills range from the basic to the most advanced skills.

The range of each skill covers a broad spectrum of simple to complex competencies. The breadth of each skill, therefore, is directly related to the breadth of the successive lower-level skills. Basic descriptors for the five skill levels are[5]:

1. **Think:** the ability to identify cognitive musical attributes.
2. **Listen:** the ability to discriminate, interpret, and evaluate sounds--i.e., auditory perception and discrimination.
3. **Perform:** the ability to make music (instrumentally or vocally).
4. **Conduct:** the ability to direct (i.e., plan, coordinate, and assess) a music organization
5. **Compose:** the ability to create original music.

This concept of MI, as shown in Figure 1, proposes that all the musical skills identified by the literature fall into these five levels. Admittedly, the descriptors and their corresponding definitions are grossly simplified. Musical independence illustrates that musicianship *(horizontal axis)* ranges from a typical high school music student (beginner) to a concertizing professional (advanced). Furthermore, each definition incorporates the full spectrum of musicianship. The musical independence **descriptors** *(left--vertical axis)* illustrate the musician's cognitive/psycho-motor development. In applying the concept of a hierarchy to musical independence descriptors, ***knowing*** is a prerequisite to sensing; ***sensing*** is a prerequisite to

5 Bobbett, G.C.,*Evaluating Student Achievement in Secondary Instrumental Music Programs*, Mid-South Educational Research Association, November, 1987.

making; *making* is a prerequisite to directing; and *directing* is a prerequisite to *creating*.

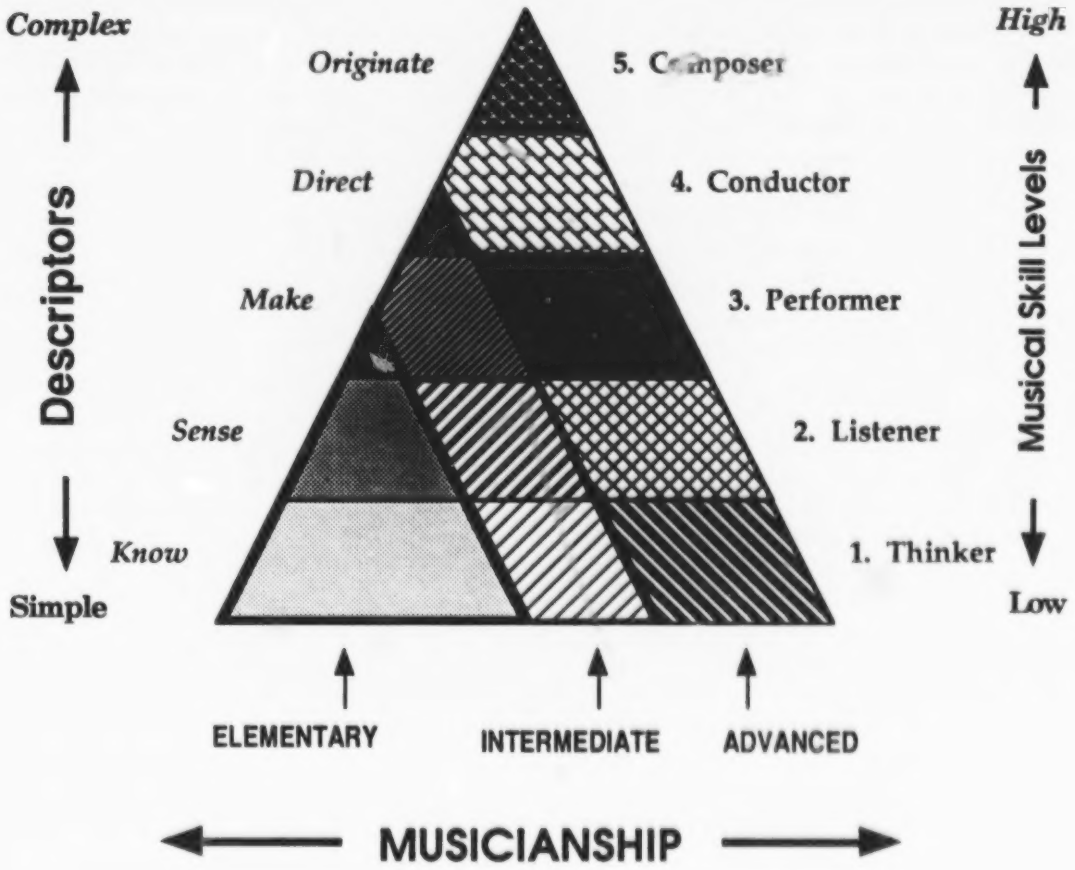

Figure 1. Hierarchy of Musical Independence (MI)

E. The Real World

Bobbett evaluated the musical skills of college instrumental students and programs (the collectivity of students) and analyzed this information from the perspective of MI. In a performing organization such as band or orchestra, student skills are usually identified through an audition process, whereby experts evaluate the student's playing. If musicians perform well, they are placed in the top-performing organization or in the top section within the performing organization (i.e., they are given more leadership responsibilities). If the students have weak performance skills, they are assigned to the training organization, or to a less responsible part.

The evaluation process does not end after the audition. Musical independence is further evaluated by both the conductor and other musicians. During rehearsals and performances, the "musically independent" student demonstrates his/her performance

skills to the extent that s/he needs little or no supervision, while the less capable musician needs more musical supervision. Eventually, accomplished performers are assigned more responsible tasks, and less capable students are assigned less demanding parts. Finally, the very best musicians are asked to make advanced musical judgements, such as performing solos, directing sectional rehearsals, conducting rehearsals and/or performances, and arranging new music.

This research project examined the real-life scenario described above. It examined music students, not from an academic achievement basis, but on the holistic notion of a student's musical independence. In other words, the student's ***knowledge*** (that which is typically assessed by the usual musical achievement test) is only a small portion of the picture. What the student can actually ***do*** is the big picture.

III. Test Questionnaire

A. Colwell's MAT3

This research used Colwell's Music Achievement Test 3 (MAT3) to evaluate the musical independence (MI) of University of Tennessee-Knoxville students and programs in both the Wind Ensemble (WE) and the Campus Band (CB). Both organizations have specifically defined missions. The WE is the top or elite band and is asked to represent the school at most functions, while the CB is the training organization. The better instrumentalists are usually recruited and assigned to the WE and the weaker students are assigned to the CB. The CB students advance to the WE when they are either needed or when they have acquired a higher level of musical independence.

Colwell's MAT3 was used for this project because it best evaluates the student's musical independence, is easily administered, and has previously determined reliability estimates and validity. The MAT3 consists of four sub-tests (ST): (1) Tonal Memory (ST1), (2) Melody recognition (ST2), (3) Pitch Recognition (ST3), and (4) Instrument Recognition (ST4).

What distinguishes these skills tested by the MAT3 from other identified skills found in other achievement tests? Essentially, skills are acquired from either experience, study, or a combination of the two. When a student exclusively studies a particular discipline, s/he lacks the full breadth of the particular discipline. For example, if a medical doctor only had to study medicine using textbooks, there would be no need to participate in an internship. Obviously, the medical student needs to practice and participate in the actual medical environment by working with real patients under the direction of more experienced physicians. In music, studying and acquiring textbook knowledge has limited value. There are subtle discrimination skills learned ***exclusively*** through the student's collective musical experiences, such as practicing and performing on his/her respective instrument.

The MAT3 is an appropriate instrument because it measures musical skills learned in the actual production of music. For instance, it is easy to observe the musical score and determine which part (i.e., top, middle or bottom) has a given melody. Hearing the same melody and determining whether it is the top, middle, or bottom part without the aid of the score is much more difficult; yet, this is what the student must do when taking Colwell's MAT3--Subtest 2, "Melody Recognition." Experience, rather than pure cognitive knowledge, plays an instrumental role in the development of such musical discrimination.

In actuality, the student learns melody recognition through many hours of hearing the musical part performed while simultaneously listening to all the other parts of the

musical performance. Hearing the respective part performed, and uniting this with other performers are the elementary parts of playing in an ensemble. Performers must be constantly aware of many other musical parameters such as intonation, phasing, balance, and sonority for both themselves and others. Hence, performing music is never constant, for each note and each measure dictate different demands and responses from the musician. Performaning music, with its respective associated skills, is an act of doing and not simply knowing. Where "knowing" is the first elementary step, **SENSING** "doing" requires the additional process of uniting many musical skills. Each of Colwell's MAT3 sub-tests has a measure of evaluating musical skills from a comparable perspective; each test is not limited to simply identifying and evaluating "knowing" skills, but rather demonstrating the discrimination skills associated with "doing". Sensing the the connection between doing and knowing, that is, by doing something, the student automatically sences what is done (i.e., listens).

B. Demographics

In addition to the MAT 3, the researcher added additional demographic questions covering three broad areas:

1. **General** questions sought information regarding the instrument and part the students played in their respective organization, whether they were a music or non-music major, class (e.g., freshman, senior, graduate), race, and gender.

2. **High School** questions were subdivided into two general categories: (1) music, and (2) other. High school music questions explored the student's past musical experiences such as solo-ensemble, marching contest, all-state band, concert festival, church community choir, private lessons, and the size of his/her high school band. The second category included questions about the student's past academic achievement, including the ACT score, SAT score, high school rank, high school GPA, and the size of high school attended.

3. **College activity** questions sought information about the student's musical experiences and academic environment. Demographic music questions inquired about the student's average daily practice time, frequency of recitals, whether or not the student received a music scholarship, and the amount of the scholarship. The academic questions explored the student's past/present academic success.

IV. Purpose

The test questions were formulated to address the purpose of this study. This study determined the: (1) utility of the "musical independence" (MI) concept as a standard of musical achievement, (2) utility of Colwell's Music Achievement Test 3 (MAT3) to assess post-secondary instrumental musical independence, and (3) relationship of musical and academic experiences to test results.

V. Data Analyses

Colwell's MAT3 was administered to the University of Tennessee's WE and CB. The data were organized into two categories: (1) MAT3 data, and (2) other data (demographics, general MAT3 analysis, music major/non-music major analysis, gender analysis, instrumental sections, general demographics, correlation analysis,

and high school musical experiences).

The level of significance for this study was $p < .05$.

A. Demographics

As a preliminary step in the data analyses, the data were reviewed, and percentages were calculated. The three sub-categories for demographics are (1) general demographics, (2) high school activities, and (3) college experiences. Note: a small percentage of students omitted several items in the questionnaire. These will be notated as non-responses (NR).

1. General Demographics

The WE had the same general instrumentation as the CB for woodwind, brass, and percussion performers (44%, 44%, 12%; 34%, 56%, 10%, respectively). In addition, performers were identical in gender (56% male, 44% female), and similar in race ([WE] 94% white, 4% black, 2% NR; [CB] 91% white, 6% black, and 2% oriental, 1% NR).

Differences were most apparent in the percentage of music majors/non-music majors and the mix of grade levels participating in the two organizations. The WE had 63% music majors and 37% non-music majors, while the CB had 22% music majors and 78% non-music majors.

The WE had a larger proportion of upper classmen. The WE (n=51) enrollment per class (i.e., freshman to graduate students) was 25%, 29%, 6%, 33%, and 6%, while the CB (n=73) enrollment was 41%, 26%, 23%, 8%, and 1%, respectively.

2. High School Activities

High school music experiences include all the activities in which the student participated during the student's senior year. The WE students participated in a larger percentage of music activities than the CB students (*see Figure 2*). They had a larger percentage involved in **solo-ensemble** (71% to 65%), **marching contest** (96% to 94%), **all-state band** (75% to 60%), **concert festival** (96% to 89%), and took more **private lessons** (78% to 73%). When analyzing the same data from the perspective of lessons for three or more years, the WE students had a larger percentage than the CB students (45% to 34%). **Church/community choir** is the one exception where the WE students participated less than the CB students (59% to 66%).

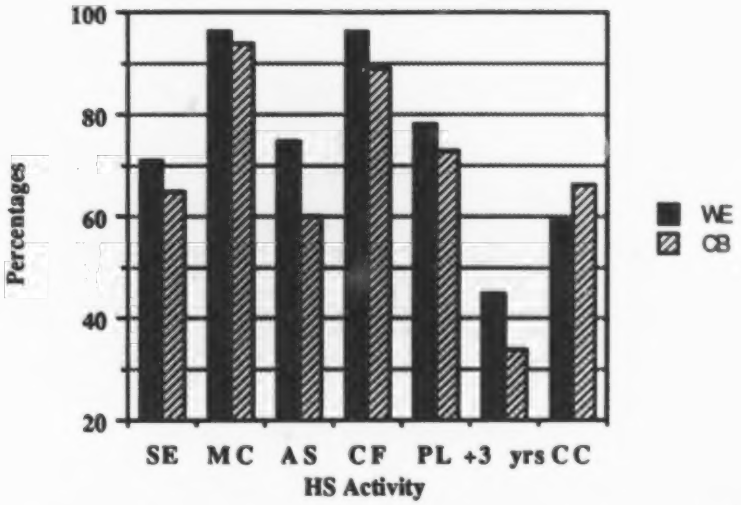

Figure 2. High School Music Activities for students in the WE and CB: Solo-Ensemble (SE), Marching Contest (MC), All-State Band (AS), Concert Festival (CF), Private Lessons (PL), 3 or more years of private lessons (+3yrs), and Church/ Community Choir (CC).

The WE students, compared to the CB students, had slightly better academic achievements. Although the mean high school grade point average was about the same for the WE and CB (GPA) (M = 3.35, 3.33), the WE students scored higher on the ACT (M = 25.59, 23.13).

Students were asked to indicate their high school's approximate enrollment (small: 0-499, medium: 500-799, medium large: 800-1199, and large: 1200+). WE students came predominantly from medium large and large high schools (4%, 13%, 40%, 40% [3% NR]), respectively), while the CB students came from predominantly large schools (6%, 17%, 28%, 49%, respectively). In addition, the WE students participated in a high school band with a larger mean enrollment than the CB students (M = 119, 98).

3. College Experiences

College experiences might reflect the variables associated with the students' musical growth and ultimately their MI. The WE students participated in more recitals during the last year than the CB students (36%, 25%), received more (M = 86%, 46%) and larger (M = $799, $623) scholarships, and practiced more minutes per day than students participating in the CB (M = 86, 59). Academically, the WE students had higher college GPA scores (M = 3.07, 2.83, respectively).

B. MAT3

Fifty-one students in the Wind Ensemble and 73 students in the Concert Band took Colwell's MAT 3. The WE mean scores for the four subtests were greater than the mean scores for the CB. In addition, the WE students scored significantly higher on each of the four sub-tests (*see Table 1*).

Table 1 MAT3 subtests and total mean scores for the University of Tennessee's WE and CB

Group	ST1	ST2	ST3	ST4	Total
WE (n=51)	16.12	14.78	14.71	13.67	59.28
CB (n=71)	15.55	13.19	13.04	12.93	54.71
Difference (WE-CB)	.57	1.59	1.67	.74	4.57

The WE and CB students' mean scores for the four subtests and the total score were converted to percentile scores[6]. The WE students' percentile scores for the four subtests and total test (75, 76, 81, 89, 90, respectively) were higher than the CB percentile scores (61, 70, 74, 78, 78, respectively). Figure 3 illustrates that the WE earned higher subtests and total test percentile scores than the CB students.

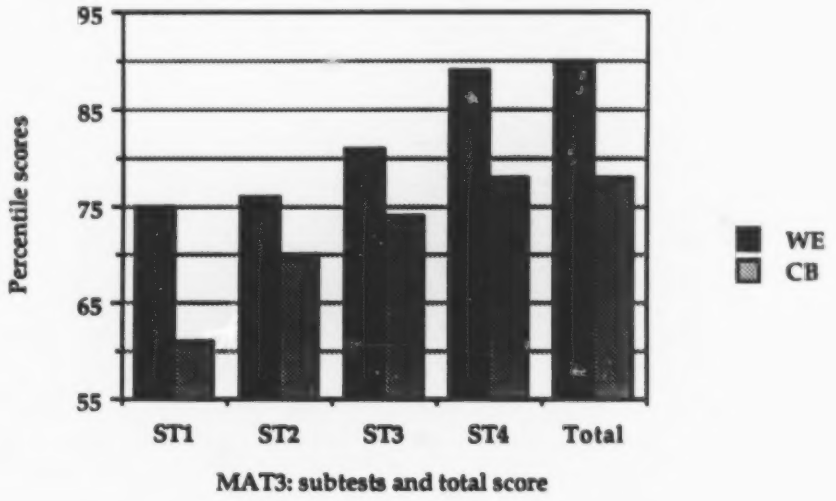

Figure 3 MAT3 mean percentile subtests and total scores for the WE and CB.

C. Music Major v. Non-Music Major

The WE and CB students were pooled, and the music majors' (MM) and non-music majors' (NMM) MAT3 scores were evaluated by class (e.g., freshman, sophomore, graduate). The MM students' mean scores were higher by class (M = 61.35, 56.73, 60.0, 62.17, 66.0, respectively) than the NMM students (M = 51.65, 55.32, 54.67, 55.27, 55.0, respectively).

Mean scores were converted to percentile scores. The MM mean percentile scores by grade level were higher (93, 84, 91, 94, 98) than the percentile scores for the NMM (70, 81, 78, 81, 78). The mean percentile score difference between the MM and NMM was 23, 3, 13, 13, 20 (*see Figure 4*).

6 Colwell, Richard, Music Achievement Test 3 and 4, Interpretive Manual, Follett Educational Corporation, 1970.

Note in Figure 4 the very systematic growth in MM students between the sophomore and graduate students. In contrast, there is NO growth trend between the sophomore and graduate NMM students.

The MM and NMM data my be artifact because the majority of MM were in the WE. Where the directors screened the students through the audition process and placed them in the appropriate organization (i.e., the WE or CB), the MM/NMM data analysis shows the influence of the educational process on the student's musical maturity. In essence, the MAT3 was effective in differentiating between skilled and lesser-skilled music students.

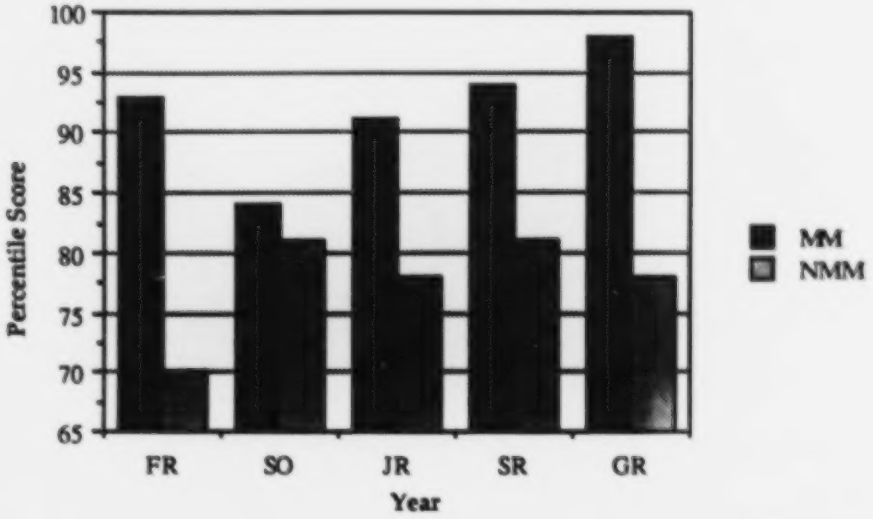

Figure 4 MAT3 mean percentile scores for Music Majors (MM) and Non-Music Majors (NMM) for Freshmen, Sophomore, Junior, Senior, and Graduate Students.

D. Gender/pooled

The WE and CB students were pooled and the MAT3 scores for male and female were evaluated. Males earned a slightly higher score on ST1, ST2, ST3, and total score, while the females earned a higher score on ST4 (*see Table 2*).

Table 2 MAT3 subtest and total scores by gender for pooled students in the University of Tennessee's WE and CB

Gender	ST1	ST2	ST3	ST4	Total
Male (n = 65)	15.67	14.08	14.06	13.09	56.91
Female (n = 51)	15.15	13.73	13.29	13.37	56.26

E. WE and CB students (pooled): Woodwind, Brass, and Percussion subtests and MAT3 scores.

After pooling the WE and CB students, there were 47 woodwind, 63 brass, and 14 percussion students who took Colwell's MAT3. The woodwind students' mean scores were higher on ST1, ST2, ST4, and total MAT3, and the percussion students' scored lowest on ST1, ST2, S4, and total MAT3 (*see Table 3*).

When the three sections in the band were compared, there was no significant difference between the highest and lowest scores for the ST1, ST2, ST4, and MAT3 test scores, except for ST3, where the percussion students scored significantly higher than the brass students ($df = 75$, $t = 1.725$).

Table 3 MAT3 subtest and total scores by instrumental section for the University of Tennessee's pooled WE and CB

Section	ST1	ST2	ST3	ST4	Total
Woodwind (n=47)	15.96	14.34	13.62	13.36	57.28
Brass (n=63)	15.68	13.97	13.46	13.18	56.29
Percussion (n=17)	15.64	11.64	15.29	13.07	55.64

F. The MAT3 was used to compare the 1st Clarinetists and 1st Trumpets (i.e., woodwind and brass 1part), to the 2d Clarinetists and 2d Trumpets, and to 3d Clarinetists and 3d Trumpets.

The two largest instrumental sections in the WE were the clarinet and trumpet sections. The mean scores for the students that played 1st part ($n = 5$) for the four sub-tests and the total scores were 16.8, 17.0, 17.0, 14.0, and 64.8, the scores for the 2nd parts ($n = 6$) were 14.7, 13.8, 13.5, 13.3, 55.3, and the scores for the 3rd parts ($n = 8$) were 17.4, 15.6, 15.1, 12.6, and 60.8. The scores were rounded and converted to percentile scores. Figure 5 illustrates how the first-part musicians are skilled in many areas, whereas the 2nd- and 3rd-part musicians lack many of the same skills.

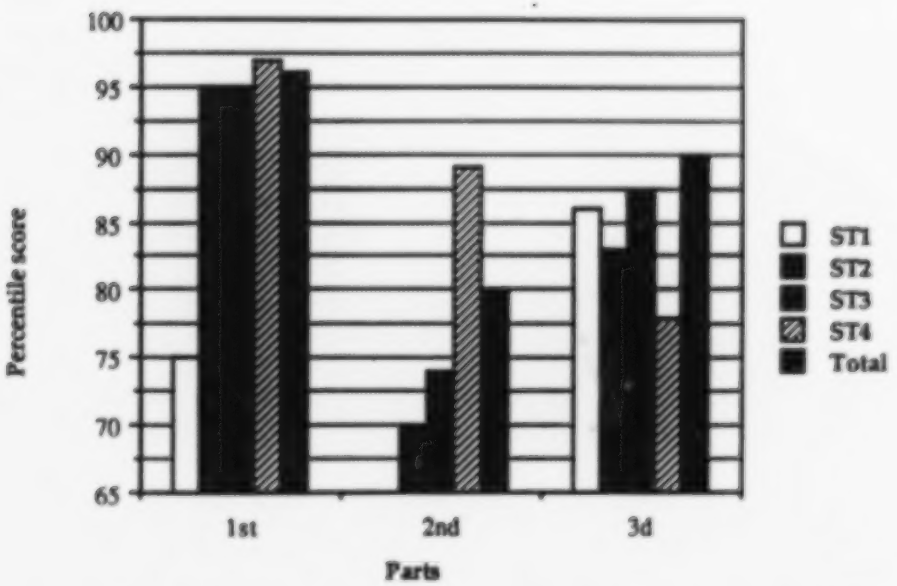

Figure 5 MAT3 sub-test and total test percentile scores were compared for 1st, 2nd, and 3rd parts for clarinet and trumpet

G. General Demographics

The WE students scored higher than the CB students in five demographic areas: (1) time practiced per day, (2) ACT scores, (3) high school GPA, (4) college GPA, and (5) scholarship.

1. The WE's mean **practice time** per day was significantly greater ($df = 103$, $t = 2.469$, $M = 85.89, 58.47$) than the CB's mean practice time.
2. The WE's mean **ACT** scores were signifacantly greater than the CB's mean score ($df = 99$, $t = 2.9$, $M = 25.59, 23.13$, respectively).
3. The WE's students mean **high school GPA** was slightly, but not significantly, greater than the CB's mean high school GPA ($M = 3.35, 3.33$, respectively).
4. The WE's mean **college GPA** was significantly higher ($df = 111$, $M = 3.069, 2.828$, respectively) than the CB's mean college GPA.
5. The WE mean **scholarship** was greater ($df = 69$, $t = 1.102$, $M = \$799.47, \$623.60$, respectively), but not significantly, than the CB's mean scholarship.

H. Correlations

The WE and CB students were pooled and their MAT3 scores were compared to other demograhics.

1. High school size and MAT 3/pooled

The researcher, using Spearman Correlation Coefficient, compared the students' high school enrollment (small, medium, medium large, and large) with the pooled MAT3 scores. Interestingly, the high school's size had a large *negative* correlation with the students' MAT3 scores ($n = 120$, $Z = -.844$).

2. Band size and MAT3/pooled

The Spearman Correlation Coefficient was used to evaluate the high school's band enrollment and the pooled MAT3 scores. Here, there was a high positive correlation between the student's *band* enrollment and the students' MAT3 score ($n = 119$, $Z = .774$).

3. Correlation between ACT and MAT3/pooled

Using Pearson's Product Moment, there was a small, positive correlation ($n = 101$, $r = .225$) between the students' (pooled) ACT scores and the MAT3 scores.

VI FINDINGS

A. Musical independence is a benchmark on which to assess instrumental programs.

Musical independence, as represented by the MI hierarchy, incorporates the musical skills for all levels of musical growth and maturity. Historically, most musicians are evaluated based on their performing skills through the audition process. They are continually being assessed by program directors, private instrumental teachers, and peers. The students who possess more skills are given more playing and administrative responsibilities.

B. MI is a holistic concept

Musical independence is not a narrowly-defined concept, but it incorporates the varied skills (and skills levels) associated with being an independent musician. Like many other disciplines, music requires the mastery of many skills; hence, musicians and music programs should not be evaluated based on a single musical skill (e.g., pitch, harmony, rhythm). A musically independent individual reflects the mastery of many skills on eventually all five levels.

C. Colwell's MAT3 is a useful tool for evaluating MI

The MAT3 test results parallel the performance-based assessment as mentioned in Finding #1 above. The MAT3 discriminated between: (1) WE and CB for each of the four subtests and total score, (2) music majors and non-music majors, (3) sophomores to graduate students in WE, (4) woodwind, brass and percussion sections, and (5) between instrumental Parts (1st, 2nd, and 3rd). The MAT3 did not show a gender bias.

D. Practice Time

There appears to be a strong linkage between the amount of time spent practicing and sustained musical growth. Once growth can be both identified and measured, then the next step in developing a sound musical education is developing methods to accelerate the student's MI maturation.

E. MI development requires many types of training experiences, such as all-state, solo-ensemble, concert festival, private lessons, and church/ community choir participation.

As seen from the MAT3 test results, there is a positive correlation between the student's audition results (as shown by the student's placement either in the CB or WE) and his/her performance on the MAT3. The students who scored the highest on

the MAT3 had a diversified performing background compared to the students who did not score as well.

F. The MAT3 reflects the program director's organizational philosophy.

The MAT3 can be used to indicate the program director's musical philosophy, and to reflect this philosophy within the performance group. Interestingly, the freshmen, the second highest MI category of students, are assigned to the 3rd part (*see Figure 5*). The students assigned 1st parts are the only group that possesses across the board high MI skills. *Why would a director assign their second best group of musicians to the last part?*

Musically, each chord's fundamental requires extra projection to balance the higher notes in the chord. The director recognized this musical phenomon by the assigning the second most MI students to the last part (usually the lowest note of the chord). Musically, these MI students (freshmen) by performing the bottom part, emphasized the chord's fundamental. The example of a tuba and piccolo demonstrates an important musical phenomon. The tuba might seem loud when heard up close, but from a distance of two blocks, is barely audible. The piccolo's sound is piercing but not loud, yet is clearly heard several blocks away. In practice, most concert bands have one piccolo or E-flat clarinet but have five to eight tubas.

The directors were familiar with the different instrument's projection characteristics and the inablility to project when played in the lower register. Therefore, s/he emphasized the lower tones by assigning more students and better students to the lower parts (i.e., 3rd and 4th). The MAT3 data measured and indicated this musical technique of assigning good performers to the bottom parts.

VII SUMMARY

MAT3 can be effectively used not only to measure growth in a secondary program, but to "red-flag" programs that are not growing. The MAT3 data indicate that the non-music majors grew to a very small degree, whereas the sophomore to graduate music majors matured at a steady rate. Naturally, without the benefits of all the music courses and other musical experiences, non-music majors should not reflect comparable MI growth.

VIII. FUTURE QUESTIONS

A. Is MAT3 an intellectual test (i.e., IQ test), or truly an musical achievement test?

It might be argued that since the better academic students are in the WE and the weaker ones are assigned to the CB, and since the WE students scored significantly higher than the CB students on the MAT3, the MAT3 might be a quasi-intelligence test instead of a test for MI. In other words, to what extent are thinking skills and MI skills discrete?

B. Why do many of the *skilled* musicians quit the WE/CB after their freshman year? (*see Figure 4*)

Many students change majors or quit college during their freshman year. A longitudinal study might be appropriate to determine whether the "better" students quit music, or simply change college majors. Seniors and graduate students scored only *marginally* higher than the freshmen!

C. Is the MI growth (as measured by Colwell's MAT3) from sophomores to graduate students a statistical accident or a measure of real musical growth? (*see Figure 4*)

Freshmen are more inclined to drop out of school or change majors than any other class. Excluding the freshman data, the likelihood for systematic growth between the sophomores and the graduate students seems remote. However, the test data show slow but steady musical growth and do not appear to be a random arrangement of percentile scores.

D. Does participation in organized post-secondary programs contribute the student's MI?

There appears to be a very systematic growth in MM students between the sophomore and graduate students, but there is **NO** growth trend between the sophomore and graduate NMM students (*see Figure 4*). The lack of growth for the NMM students may be due to the absence of meaningful, musical experiences and training for post-secondary students.

E. What is the MI for the average entrance level (freshman) student?

If the MM students' growth trend for sophomore and graduate students is relatively accurate in terms of the students' MI and with its respective grade-level for MI, then it might be suggested that the typical entrance level MM student that continues as a music major might be projected between 79 to 83 on Colwell's MAT3.

By assuming **linear** growth, and by adding lines representing growth trends to Figure 4, a hypothetical MM freshman's MAT3 score might be plotted as seen in Figure 6. Letter **A** (i.e., growth trend that is visually determined by connecting the mean GR to the mean JR) in Figure 6 denotes the hypothetical freshman's *upper* range MAT3 percentile score, while **B** (i.e., GR to SO) represents the *lower* hypothetical score.

Hypothetically, cubic or exponential growth between freshman to graduate student's might suggest an even lower MI entrance level (i.e., lower than the 79 to 83 percentile range) for music majors than the linear growth assumption.

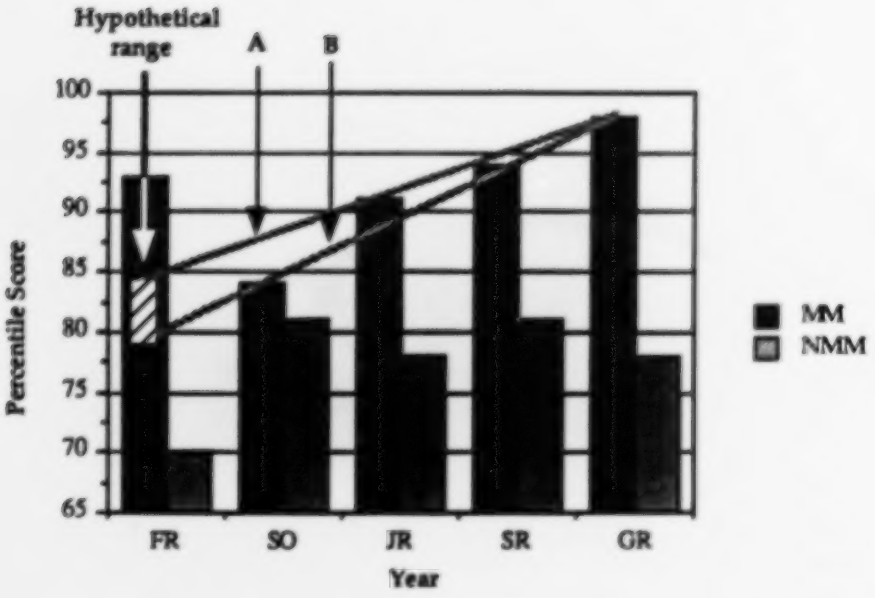

Figure 6. Hypothetical MI, as measured by the MAT3, for average freshmen.

G. Since many freshmen scored comparatively high on the MAT3 (*see Figure 4*), are many of the college courses essential? In addition, what aspects of the student's high school music programs plus other musical experiences (all-state, concert festival, etc.) contribute to MI?

Are the high school musical/academic activities more conducive to the promotion and growth of MI than most college courses? In addition, what college courses/activities might be added or deleted from the student's curriculum to accelerate the growth of MI? Presently, music educators do not fully understand which courses should be emphasized, de-emphasized, or eliminated.

H. To what extent does each of the high school musical activities (i.e., all-state band, concert festival, private lessons, etc.) contribute to MI growth (*see Figure 5*)?

Since the WE students earned higher MAT3 scores than the CB students and were involved in more musical activities, then which musical activities contributed most to MI? Presently, there is insufficient data to recommend one musical activity over another. If this question could be answered, present high school curriculums might be modified by emphasizing the activities that contribute the most to MI.

I. Why did woodwind students score highest on three subtests and total score? Also, why did the percussion students score highest on subtest 3 (*see Table 3*) and the lowest on the other three subtests?

One could reasonably assume a direct correlation between the number of notes musicians play and their success on the MAT3. This may be a reason why woodwind players, whose parts usually consist of more pitched notes, score higher than brass or percussion instrumentalists on the MAT3. Generally, brass players score lower than

woodwind players, and percussion players lower than brass players. Obviously, percussion students play instruments that are rhythmically involved (e.g., snare drum, base drum, cymbals) but rarely play specific pitched instruments, such as the xylophone or marimba. As a result, one might assume that percussion students would not perform well on the following MAT3 subtests: Tonal (ST1), Melody (ST2), or Instrument recognition (ST4). Unfortunately, this rationale loses credibility when the MAT3 data for the Pitch recognition (ST3) is observed. Table 3 indicates that percussion students earned the highest scores for Pitch Recognition, but the lowest scores for the other three subtests and total test scores.